THE RELATIONSHIP BETWEEN STRATEGIC IT VISION AND THE CONFIGURATION OF CIO ROLES AND THEIR STRUCTURAL POWER

ABSTRACT

The organisational strategic IT vision has been considered as a key contingency that affects the role of Information Technology (IT) leadership in organisations. This study investigates the influence of strategic IT vision of an organisation on the chief information officer (CIO) role and structural power. A large-scale survey was conducted on Australian organizations. Results of the data analysis of 162 responses shows that the importance of six key CIO roles across four different strategic visions of IT differed for the Educator role between organisations with 'transform' and 'automate' strategic IT visions and differed for the Information Steward role between organisations with 'transform' and 'informate-down' strategic IT visions. The findings also show that there is significant positive association between the organisation's strategic IT vision and the CIO's structural power in terms of reporting structure and CIO job title. This study has implications for practitioners as the findings indicate the necessity for CIOs to align their roles with their firm's IT vision and suggest that Chief Executive Officers (CEOs) should empower their firm's CIOs in terms of their reporting structure and job title as the role of IT in the organisation progresses from the lower strategic vision of IT (automate) to the highest vision (transform).

Keywords: Organisational strategic IT vision, Chief Information Officer (CIO) Role, CIO's reporting structure, CIO's job title, Australia

INTRODUCTION

The strategic Information Technology (IT) vision is a key contingency affecting the role of IT leadership in organisations (Feeny, Edwards, and Simpson 1992; Kaarst-Brown 2005; Preston and Karahanna 2009; Smaltz , Sambamurthy, and Agarwal 2006; Smaltz 1999). The literature indicates that Chief Information Officers (CIO) play multiple roles in their jobs (Agarwal and Beath 2007; Earl 1996; IBM 2009; McLean and Smits 1993; Peppard, Edwards, and Lambert 2011; Smaltz et al. 2006). These multiple roles can be grouped into (1) operational (supply side) roles and (2) strategic (demand side) roles (Broadbent and Kitzis 2005; Chen, Preston, and Xia 2010; Mark and Monnoyer 2004). Prior studies have acknowledged that IT is viewed by organisations in different ways and used for different purposes (Dahlbom and Mathiassen 1997; Kaarst-Brown 2005; Marchand 2007; McFarlan , McKenny, and Pyburn 1983; Schein 1989, 1992; Spitze and dePaschalis 2005). An extensive literature review indicates that few studies have examined the relationship between the organisational view of IT strategic vision and the roles of the CIO in an organisation. For example, Smaltz (2000) and Li, Ding, and Wu (2012) found that CIOs in the organisations that viewed IT as a transformation tool perceived their strategic CIO roles to be the most important. Periasamy and Seow (1998) interviewed eight CIOs and found conflicting points of view regarding the role of the CIO working in firms that espouse an 'automate' view of IT.

Other studies have failed to capture any significant effect for the organisational IT vision on CIOs' effectiveness in their roles (Brown 2006 ; Smaltz 1999). One study, Grover, Jeong, Kettinger, and Lee (1993) found that as the use of IT matures, the strategic role of the CIO does not become more important. There is also lack of empirical research that has investigated the direct impact of the organisational view of IT on the CIO structural power in an organisation. Investigating the structural power of the CIO is crucial as the legitimacy of this executive manager has not been fully established in many organisations (Kaarst-Brown

2005).The lack of previous academic research in this area and the inconsistency in the results of previous empirical studies provides the justification for further investigation of the association between the strategic vision of IT in organisations and the role of the CIO and the structural power of the CIO job position in organisations.

A better understanding of the relationship between the strategic IT vision of the organisation and the CIO roles and their structural power should facilitate the alignment between them. It is anticipated that the vision of IT for an individual organisation requires a CIO to adopt an appropriate configuration of roles that is aligned with the IT vision of an organisation. The mismatch between the IT vision of an organisation and the CIO roles could result in (1) weak alignment between the IS and firm's strategy, (2) reduction in the business value of IT, (3) decrease in the effectiveness of the CIOs, (4) corruption of the relationship between the CIOs and the Chief Executive Officers (CEOs), and finally, (5) misalignment of the current CIO roles with the IT vision of an organisation which in turn could threaten the survival of the CIO position in an organisation. Therefore, the CIO who is adopting the right roles and is given the required structural power to implement the vision of IT in an organisation is more likely to succeed and survive in their job. Hence, the purpose of this study is to investigate the relationship between the organisational IT vision and the configuration of CIO roles and structural power of a CIO in an organisation. The general research question investigated in this paper is as follows:

Is the configuration of CIO roles and structural power of a CIO affected by the organisation's strategic vision of IT?

This paper is structured as follows. First the relevant literature regarding the strategic IT vision in organisations and the CIO role is reviewed and a set of hypotheses are formulated from the literature. Next, the research methodology used in this study is described and justified. After that, the results of the analysis of the survey data are presented and discussed.

Finally, implications of the key findings for existing theory and practice are discussed and some suggestions for future research are provided.

LITERATURE REVIEW

Strategic IT vision

Strategic IT vision refers to the shared, aspired state of the role that IT should play in the firm (Robbins and Duncan 1988; Zmud 1988 as cited in Armstrong and Sambamurthy1999). It is worth mentioning that different names have been used interchangeably for this construct such as the CEO's basic assumption about IT (Kaarst-Brown 2005; Schein 1989, 1992); IS orientation (Teo and Too 2000); IS/IT role (Chen, Mocker, Preston, and Tuebner 2010; Feeny et al. 1992; Hallikainen, Hu, Frisk, Päivärinta, Eikebrokk, and Nurmi 2006; Ramakrishna and Lin 2002; Richardson and Zmud 2002); organisation's attitude to IT (Earl 1996); and the main purpose of IT (Weiss, Thorogood and Clark 2006). The previous literature summarised in Table 1 reveals different typologies about how the organisations could view the role of IT.

References	Organisational views / assumption about the role of IT
McFarlan et al. 1983	Support; Factory; Strategic; and Turnaround
Cash et al. 1988	Exploiter/innovator; Competitor/early adopter; and Participant/ effective or efficient follower
Zuboff 1985	Automate; and Informate
Schein 1989, 1992	Automate; Informate-down; Informate-up; and Transform
Venkataraman 1991	Automate; Informate; and Transform
Dahlbom et al. 1997	Build things; Help people; and Change things
Earl 1996	Support tool; Critical resource; Means of transformation; and Unclear
Kaarst-Brown 2005	Necessary Evil; Support not a partner; IT rules!; Business can do IT better; and Equal partner
Weiss et al. 2006	Technical resource; Business enabler; and Strategic weapon
Marchand 2007	IT Doesn't matter; IT Pushes the business; Business Pushes IT; and IT Does matter

Table 1 Literature Summary- Main IT Role Typologies (Source: Developed for this study)

The strategic IT visions' typology (Schein 1989, 1992) has been widely adopted in previous IS literature (Armstrong and Sambamurthy 1999; Bassellier, Reich,and Benbasat 2001; Feeny et al. 1992; Hallikainen et al. 2006; Sherer 2004; Smaltz 2000; Smaltz et al. 2006; Smaltz 1999; Tripp 2008). The strategic IT vision of an organisation (Schein 1989, 1992) can be

classified into four distinct views: automate, informate-down, informate-up, and transform. A brief description of each of these views is provided in Table 2.

Vision	Description	Purpose (Feeny 1997)
Automate	The potential of IT is cost saving or quality improvement through automation. The role of IT is to replace expensive, unreliable human labour, or at least transform its productivity.	Cost-displacement and efficiency
Informate-down	The potential of IT is to empower employee driven performance improvement. The role of IT is to provide data and transaction that yield a far fuller picture at 'operator' level, with members of the staff gaining greater insight into their own activities.	Empower employees
Informate-up	The potential of IT is to increase managerial control of the organisation. The role of IT is to provide data and transaction that allow management to have more clear and organized views of the state and dynamics of the organisation.	Increase management control
Transform	The potential of IT is to transform the organisation. The role of IT is to fundamentally change the organisation and /or industry through new products and services often including redefinition of relationships with the organisation's customers and /or suppliers.	Achieve radical change in some aspect of business

Table 2 The Organisational Strategic Views of the Role of IT (Sources: Feeny (1997); Feeny et al. (1992); Schein (1989); Smaltz (1999))

Chief Information Officer (CIO) Roles

The term 'role' refers to an 'organized set of behaviours belonging to an identifiable office or position' (Sarbin and Alan 1968). From the literature it is evident that there are four main configurations of roles that have been developed for general managers over the last four decades: Mintzberg; PAIE; CVF; and the integrated model of executive leadership roles. Table 3 summarizes these four key typologies.

Typology/Configuration	Title used in Literature	Number of Roles	Roles Label
Mintzberg 1973	Mintzberg's Managerial Roles	10	*Interpersonal roles:* Figurehead, Leader, Liaison *Informational roles:* Monitor, Disseminator, Spokesman *Decisional roles:* Entrepreneur, Disturbance hander, Resource allocator, Negotiator
Adizes 1976; Adizes 2004	PAEI	4	Producer, Administrator, Entrepreneur, Integrator
Quinn, Faerman, Thompson, McGrath, & Clair 2006; Quinn & Rohrbaugh 1981; Quinn & Rohrbaugh 1983	Competing Value Framework CVF	8	Mentor, Facilitator, Innovator, Broker, Monitor, Coordinator, Producer, Director
Hart & Quinn 1993	Integrated model of executive leadership roles	4	Vision setter, Motivator, Analyser, Task master

Table 3 Key Classic Managerial Roles Typologies

The CIO role based on the classic managerial roles configurations

Since the emergence of the CIO role in the early 1980s (Synnott 1987; Synnott et al. 1981) much has been written about it (Chen and Preston 2007; Fisher 2003; Karimi , Gupta, and Somers 1996; Stephens, Ledbetter, Mitra, and Ford, 1992). Brown (1993) asserts that the prior theories regarding managerial work and leadership are applicable to the CIO role and it could be a useful base to build on as long as the CIO is a general manager. Consequently, many researchers have attempted to apply the roles developed for general managers to the position of CIO. Twelve key empirical studies that adopted a classical managerial roles configuration in order to gain a better understanding of the CIO role(s) are summarised in Table 4.

Reference	Methodology	Sample	Country	Important Roles Found
Grover et al. 1993	Quantitative - Survey	71 CIOs and IS middle managers	USA	Spokesman and liaison roles
Stephen 1995	Observation	5 CIOs from different industries	USA	According to occurrence frequency : resource allocator, monitor, and distributer handler According to time spent: resource allocator, entrepreneur, distributer handler, and monitor roles
Gottschalk 2000a	Quantitative - Survey	101 IS//IT leaders	Norway	The new IS/IT leaders spent more time in Mintzberg's informational roles than established IS/IT leaders.
Gottschalk 2000b	Quantitative - Survey	101 IS//IT leaders	Norway	Strategic responsibilities as well as IS stage of growth influences the extent of informational roles. The extent to which the chief executives uses IT influences the extent of decisional roles, and the extent to which subordinates use IT influences the extent of interpersonal roles.
Gottschalk 2002	Quantitative - Survey	128	Norway	Entrepreneur
Karlsen, Gottschalk & Andersen 2002	Quantitative - Survey	128 IT executives and 80 IT project managers	Norway	For IT leaders: monitor For IT project managers: leaders, resource allocator, and entrepreneur
Lineman 2005	Quantitative - Survey	232 higher education CIOs	USA	Entrepreneur, resource allocator, and leader
Gottschalk & Karlsen 2005	Quantitative - Survey	80 IT leader of firms that have internal IT projects + 84 IT leader of firms that have outsourcing projects	Norway	In firms with internal IT project: leader In firms with outsourcing IT project: spokesman
Yang 2008	Quantitative - Survey	IT managers of financial industry	Taiwan	Liaison and spokesman roles
Milliron 2008	Mixed Interviews + Survey	10 CIOs of community colleges	USA	Monitor, liaison, and entrepreneur roles
Tufts & Jacobson 2010	Q-Methodology based on the CVF eight roles survey	67 Public CIOs	USA	Results oriented pragmatist; Compassionate managers; Leading edge powerbroker; and Goal oriented powerbroker
Carter, Grover, & Bennett 2011	Quantitative - Survey	45 CIOs	USA	Monitor and Spokesperson

Table 4 Empirical CIO Studies Based Classical Managerial Roles Typologies

Some interesting observations can be made on closer examination of the 12 empirical studies listed in Table 4. First, it is confirmed that applying general managers and leadership frameworks to the CIO role provides a greater understanding of the importance of CIO roles. Second, it appears that the CIO role is evolving from focusing on (communication) informatics roles such as spokesman and liaison (Grover et al. 1993) to play a more strategic role focusing on change and innovation as an entrepreneur in the organisation (Gottschalk 2000b; Karlsen, Gottschalk, and Andersen 2002; Lineman 2006; Milliron 2008). Furthermore, it is clear that the Mintzberg (1973) framework was the most used framework in 10 out of 12 CIO roles empirical studies reviewed (Carter, Grover, and Thatcher 2011; Gottschalk 2000a, 2000b; Grover et al. 1993; Karlsen et al. 2002; Lineman 2006; Milliron 2008; Stephens 1995; Yang 2008). Moreover, the extensive review of the relevant literature indicated a gap in the CIO literature that needs to be addressed as the vast majority of previous empirical studies examining the CIO roles in organisations were based on Mintzberg's framework whereas almost none used any of the other three key management roles typologies of Adizes (1976, 2004), Quinn et al. (2006, 1981, 1983), and Hart and Quinn (1993).

The CIO distinctive roles configurations

Some Management Information Systems scholars have attempted to suggest other distinctive roles for the CIO which differ from the classic managerial roles discussed in the previous section and consider the unique characteristics required for this role. This different approach to conceptualising the CIO roles was based on the fact that Mintzberg (1971) himself has asserted that all managers indeed are specialists and therefore their roles tend to be dependent on the functional area they lead. As part of the extensive review of the literature, 24 studies that specified configurations of CIO roles over the last couple of decades are summarised in Table 5.

Reference	Empirical?	Methodology	Country	Number of Roles	Number of Citations
Dixon & John 1989	No	Conceptual	USA	3	100
Klenke 1993	No	Conceptual	USA	4	14
McLean & Smits 1993	No	Conceptual	USA	4	5
Klenke 1996	No	Conceptual	USA	4	4
CSC 1996	No	Conceptual	UK	6	Not available
Feeny 1997	Yes	Qualitative (Interviews)	UK	4	8
Earl 1998	Yes	Qualitative (Interviews)	UK	8	32
Smaltz 1999	Yes	Quantitative (Survey)	USA	6	12
McLean & Smits 2003	Yes	Qualitative (Interviews0	USA	4	Not available
Cash & Pearlson 2004	No	Conceptual	USA	5	7
Perchthold & Sutton 2005	No	Conceptual	USA	3	Not available
Sojer, Schlager, & Locher 2006	Yes	Quantitative (Surveys)	USA	4	7
Smaltz , Sambamurthy,& Agarwal 2006	Yes	Quantitative (Survey)	USA	6	88
Agarwal & Beath 2007	Yes	Qualitative (Interviews)	USA	7	5
Tansley, Loughran. Edwards, Lammert, & Peppard 2008	Yes	Qualitative (Semi-structured Interviews)	UK	5	Not available
Weiss & Adams 2010	Yes	Mixed (online Survey+ interviews)	USA	3	2
Wu, Chen, & Sambamurthy 2008	Yes	Quantitative (Survey)	Taiwan & China	8	6
IBM 2009	Yes	Qualitative (Interviews)	Global 78 countries	3 pairs	Not available
Chun & Moony 2009	Yes	Mixed (Secondary data + interviews)	USA	4	36
CIO Magazine 2009	Yes	Quantitative (Survey)	USA	3	Not available
Peppard, Edwards, & Lambert 2011	Yes	Qualitative (Semi-structured Interviews)	UK	5	4
Chen & Wu 2011	Yes	Quantitative (Survey)	Taiwan & China	8	5
Nicolet 2011	Yes	Mixed (Survey + Interviews)	USA	6	0
McLean & Smits 2012	Yes	Qualitative (Interviews)	USA	4	0

Table 5 Summary of Previous Studies of CIO Key Roles Configurations

Several important conclusions can be drawn from these 24 studies of the role configurations of CIOs. First, the CIO role configurations can be classified as conceptual (N=7) and empirical (N=17). The early research on the CIO roles provided five configurations which were conceptual. The seventeen studies which were empirically based on CIO role configurations can in turn be categorised by their methodology into three groups: quantitative (N= 7); qualitative (N=7); and mixed methodology (N=3). Two thirds of these studies on CIO

role configurations were conducted in the USA (N=15), nearly one third were conducted in the UK (N=5), the rest were conducted in China and Taiwan (N=2) or worldwide (N=1). The number of suggested CIO roles in each of these 24 studies ranges from three to eight. Studies with a large number of roles in configurations (7 and 8 roles) tend to break down the main roles into much more specific roles for the sake of further explanation, while studies with fewer CIO roles in configurations (3 and 4 roles) tend to merge two or more key CIO roles for the sake of parsimony. Both the earlier and later studies developed CIO roles' configurations include both operational (supply side) roles and strategic (demand side) roles and indicate that the shift of CIO role from a largely technical role to a more strategic role started in the late 1980s. These 24 studies of CIO role configurations confirmed that the CIO has multiple roles (a configuration of roles) and not one or two specific roles. IS scholars gave different names to the CIO roles. The most cited CIO role configuration based on the data provided by Google Scholar (as December 2012) is Smaltz et al.'s (2006) configuration of six key roles, followed by Chun and Mooney's (2009) configuration of four key roles. Table 6 provides brief definitions of these six roles in the CIO roles configuration developed and validated by Smaltz et al. (2006).

Supply Side Roles	Demand Side Roles
Educator: The role of the CIO as an IT missionary, who provides insight and understanding about key information technologies to rise top management savviness, awareness, and appreciation of IT and help them to make appropriate judgments about the business value of IT and wise IT investment decisions.	**Strategist**: The organisational desire for the CIO to be an effective business partner and help their organisation leverage valuable opportunities for IT-based innovation and business process redesign.
Information Steward: The desirability of the CIO to be an organisational steward for high quality data and operationally reliable systems.	**Relationship Architect**: The desirability of a CIO to build relationships both across the enterprise as well as outside the enterprise with key IT service provide
Utility Provider: The role of the CIO as a builder of sustaining, solid, dependable, and responsive IT infrastructure services.	**Integrator**: The desirability of the CIO providing leadership in enterprise-wide integration of processes, information, and decision-support as digital options for the business

Table 6 Smaltz et al.'s (2006) Six Key CIO Roles (Source: Smaltz et al. 2006)

After rational examination and comparison of the empirical studies based on quantitative CIO role configurations, this research adopted the six CIO roles configuration developed by

Smaltz et al. (2006) for several reasons. First, this CIO roles configuration was developed from the comprehensive inventory of CIO roles identified from previous literature and empirical data obtained from in-depth interviews with CIOs and top management members. Second, it represents a comprehensive configuration that accommodates all of other empirical configurations previously identified as shown in Table 7. Also, despite the fact that this configuration of CIO roles was developed within the healthcare sector, the CIO roles that emerged were similar to the ones that have been identified in the existing literature in general (Strickland 2011). Furthermore, Agarwal and Beath (2007) found that all of the roles included in this CIO roles configuration were important in grooming the future CIOs regardless of their industry. Moreover, this configuration has been proved to be a valid typology within the Australian context (Seddon, Walker, Reynolds, and Willcocks 2008). What is more, Smaltz et al. (2006) classified these six roles into two groups: supply side roles (utility provider, information steward, and educator) and demand side roles (integrator, relationship architect, and strategist) following the modern classification of the CIO roles proposed by IS scholars such as Mark et al. (2004) and Broadbent and Kitzis (2005). Furthermore, this CIO roles configuration has been measured by a survey instrument that demonstrated high validity and reliability (Chen et al. 2010; Chen and Wu 2011; Li et al. 2012; Wu, Chen, and Sambamurthy 2008). Finally, the survey instrument for this CIO configuration is concise which is crucial as the targeted survey respondent is the most senior IT executive in the organisations who are extremely busy and are unlikely to complete a lengthy survey.

Smaltz et al. 2006 Roles configuration Reference	Demand Side Roles			Supply Side Roles		
	Strategist	**Relationship Architect**	**Integrator**	**Educator**	**Information Steward**	**Utility Provider**
Feeny 1997	System thinker	Relationship builder	-	-	Technical Virtuoso	Supply manager
Earl 1996	Visionary / Systems thinker	Relationship builder / Alliance-manager	-	-	Tactician /Reformer	Deliverer /Architect
McLean & Smits 1993; 2003;2012	Strategist/ Innovator	Innovator/ Enabler	Innovator	-	Enabler	Technologist
Sojer et al. 2006	Driver	Enabler	-	-	-	Supporter/ Cost cutter
Agarwal & Beath 2007	Strategist	Relationship Architect	Integrator / Leader	Educator	Information Steward/ Leader	Utility Provider
IBM 2009	Savvy value creator	Collaborative business leader	Insightful visionary	-	-	-
Chun & Mooney 2009	Innovator & Creator	-	Opportunity Seeker	-	Triage Nurse	Landscape Cultivator
Weiss & Adams 2010	Change agent / Business expert	Change agent	Technologist	-	-	Technologist
Peppard et al. 2011; Tansley, Loughran, Edwards, Lambert, & Peppard 2008	Innovator	-	Facilitator	Evangelist	-	Utility IT Director/ Agility IT director
Chen & Wu 2011; Wu et al. 2008	Business visionary, business system thinker, entrepreneur; & value configure	Relationship builder ; value configure; & Informed buyer	Organisational designer (Coordinating)	-	Organisational designer (Staff)	Infrastructure builder
Nicolet 2011	Strategist	-	Facilitator / Manager	Educator	-	Technologist / Implementer

Table 7 Mapping of Six CIO Roles Configuration (Smaltz et al. 2006) with other Researchers' CIO Roles Configuration

RESEARCH HYPOTHESES DEVELOPMENT

The relationship between the IT vision and CIO role

The prior literature emphasised two central facts regarding the roles of CIOs. The first is that CIOs perform a configuration of roles rather than one specific role (Agarwal and Beath 2007; Chen and Wu 2011; Earl 1996; Smaltz et al. 2006), while the second fact acknowledges that the importance of these roles differs according to the organisational contingency (Earl 1996;

Kaarst-Brown 2005; Peppard et al. 2011; Rockart, Ball, and Bullen 1982; Smaltz et al. 2006). Some conceptual and empirical researches anticipated that the strategic IT vision of the firm may affect the CIO's role (Broadbent and Kitzis 2005; Dahlbom and Mathiassen1997; Kaarst-Brown 2005; Marchand 2007; Spitze and dePaschalis 2005). Teo and Too (2000) asserted that the organisation's strategic IT vision evolves in stages from automate to informate and finally, to transform, thus firms progress along an evolutionary path that parallels with the maturing of their deployment of IT. McLean and Smits (2003) confirmed that the role of CIO has evolved and expanded into a number of roles in parallel with evolution of role of IT in organisations starting with the technologist role, then to be an enabler, then an innovator, and lastly as a strategist role. Results from a recent empirical study of 129 CIOs and senior business executives from China and Taiwan (Li et al. 2012) indicate that the strategic IT vision has a significant moderating effect on the relationship between CIO strategic roles' effectiveness and the innovative usage of IS. An empirical study of 168 senior IT executives in the healthcare sector in the USA revealed that CIO roles as business partner (strategist) and integrator were significantly more important to organisations that expressed a 'transform' vision of IT (Smaltz 2000). Hence, the literature provides support for the following hypothesis:

H1*: The perceived importance of each CIO role (strategist, integrator, relationship architect, educator, utility provider, and information steward) differs according to the organisation's strategic IT vision (automate, informate-down, informate-up, and transform).*

The relationship between the IT vision and CIO structural power

The CIO's structural power refers to the CIO's level of legitimate power in their formal position within the hierarchy of the organisation (Chen et al. 2010). For the purpose of this research two variables will be used to measure the CIO's structural power: the CIO's

reporting structure and the CIO's job title in an organisation. The literature suggested that a shared conception of the role of IT in an organisation is the key to an excellent relationship between the CEO and the CIO (Feeny et al. 1992) and it was critical to create and implement IS strategic alignment in an organisation (Preston et al. 2009). Furthermore, it has been found that the CIOs with higher reporting levels had greater influence and control over the extent of IT strategy implementation (Gottschalk 1999). Preston, Chen, and Leidner (2008) found that CIO structural power, measured by reporting structure, is positively associated with the CIO's level of strategic decision-making authority in an organisation. Cohen and Dennis (2010) found a significant relationship between the CIO reporting level and the CIO organisational positioning. Other studies have confirmed the significant relationship between the rank of IT leader and the organisation's IT strategic orientation (Grover et al. 1993; Raghunathan and Raghunathan 1989) which indicates that the higher the rank of a CIO in an organisation structure, the higher the vision of IT is ranked in an organisation. Karimi et al. (1996) emphasise that the IT leader's rank and role must align with the firm's competitive strategy. Saldanha and Krishnan (2011) found that IT-enabled business innovation is more likely when the CIO reports to the CEO. It argued that the CIOs reporting structure should align with the organisational main purpose of IT (Leonard 2007). Banker, Hu, Pavlou, and Luftman (2011) found that the firm's strategic positioning (differentiation or cost leadership) and IT orientation are a primary determinant of its CIO reporting structure. A CIO is more likely to report to the CEO and have a high level job title when IT is considered to be a strategic enabler of organisational strategy whereas a CIO is more likely to report to the CFO and have a lower level job title when IT is considered to be mainly a way to reduce costs in an organisation. The literature provides support for the following hypothesis:

H2*: The IT leader's structural power is positively associated with the firm's strategic IT vision, that is; the IT leader's job title and reporting structure will be higher when the*

organisation strategic view of IT is transformational compared to the lower levels of automate, informate-up and informate-down.

METHODOLOGY

The aim of this study is to examine the relationship between the strategic vision of IT in an organisation and the configuration of CIO roles and structural power of the CIO in an organisation. A quantitative approach based on a postal mail survey was chosen in order to establish generalizability, allow replication, and gain adequate statistical power (Straub 1989). Senior IT executives (CIOs) were the targeted survey respondent for this study. The rationale behind choosing the CIO as the most appropriate person in an organisation to provide answers on the unit of analysis (CIO roles, strategic vision of IT, CIO structural power) for this study was that they are the most experienced and knowledgeable person in terms of their roles, position in the organisation and their organisation's view of IT. Thus CIOs can provide appropriate responses to the survey questionnaire leading to more accurate results.

Research measures

The strategic IT vision of an organisation represents an independent variable in this study. This research has adopted the strategic IT vision scale developed by Feeny et al. (1992) based on Schein's (1989, 1992) typology. This scale is categorical and gives the respondents four brief statements that describe four visions of the role of IT in an organisation (automate informate-down, informate-up, and transform). The respondents were asked to choose one option that best describes their firm's vision of IT. This measure was successfully adopted by previous researchers (e.g., Armstrong and Sambamurthy 1999; Feeny et al. 1992; Smaltz 2000; Smaltz et al. 2006; Smaltz 1999) whereas we did not find any research that used the scales developed by Subramanian and Nosek (1993) and Ramakrishna and Lin (2002).

For the purpose of this research, and after a rational comparison of developed instruments related to the CIO role identified from the literature (e.g., McCall and Segrist (1980); Arthur Andersen Company (1986) cited in Passino Jr and Severance (1988); Karimi et al. (1996); Gottschalk (2000b); Smaltz et al. (2006); and Chen et al. (2011)), this study used the instrument developed by Smaltz et al. (2006). This scale was used to identify the perceived importance of six key CIO roles proposed as Strategist, Integrator, Relationship Architect, Educator, Utility Provider, and Information Steward. As explained earlier, there are two main reasons for the choice of this instrument. Firstly, this instrument has demonstrated high validity and reliability (Chen and Wu 2011; Li et al. 2012; Wu et al. 2008). Secondly, this instrument is concise which is crucial as the targeted survey respondent is the most senior IT executive in the organisation extremely busy, over surveyed and are unlikely to fill out a lengthy survey.

The third section of the questionnaire included some questions regarding the participants' demographic details including their reporting structure and job title.

DATA COLLECTION

Data for this research were collected through a large scale mail survey carried out in Australia in early 2012. A list of postal address of 954 senior IT executives in Australian private sector firms was purchased from Dun & Bradstreet Australia (2011) and provided the basis for the survey population for this study. The mail survey was administrated in two waves, an initial mail out and a follow up mail out to ensure reasonable response rate. A cover letter along with a copy of the questionnaire and pre-paid reply envelope was sent to the senior IT executives listed in the population list used in this study in February 2012. Table 8 provides some statistics regarding the survey administration.

Round	Sent	Date	Received	Complete and usable	Incomplete	R.T.S.	Not willing to participate
One	954	28/2/2012	97	95	2	105	4
Two	950	19/3/2012	67	67	-	105	1
Total	1908		164	162	2	210	5

Table 8 Survey Administration Statistics

A total of 105 questionnaires were returned as undeliverable due to invalid addresses, and emails were received from five firms not willing to participate in this survey. With 162 complete and usable responses the response rate of this study was estimated to be 19.19 percent which is considered to be a reasonable response rate for a postal mail survey compared to similar studies involved CIOs where response rates ranged from 7 to 22.5 percent (Chen and Wu 2011; Gerow 2012; Oh and Pinsonneault 2007; Preston et al. 2006; Weiss and Adams 2010; Wu et al. 2008). The targeted respondents in the sample population were senior IT executives who are busy people and tend to be over surveyed.

DATA ANALYSIS

Measure Validation

The validity and the reliability of the CIO roles instrument developed by Smaltz et al. (2006) was checked prior to any further inferential analyses. This step is not applicable for the strategic IT vision scale as it is a categorical measure. Due to the sample size, the collected data was analysed using component based structural equation modelling method (SEM), partial least squares (PLS). Hair, Ringle, and Sarstedt (2012) asserted that PLS/SEM is more favourable with smaller sample sizes. The CIO roles were modelled as reflective constructs, hence five major areas should be tested to ensure measurement validity (Henseler, Ringle, and Sinkovics 2009): reliability at the construct level; reliability at the indicators level; convergent validity; discriminant validity at the construct level; and discriminant validity at the indicators level. PLS Graph (Chin 2003) software was used to test the measurement (outer) model.

Following common criteria suggested by Chin (1998b, 1998a, 2010); Hulland (1999); Gefen and Straub (2005); and Henseler et al. (2009) we examine the inter-construct correlations, composite reliabilities, average variance extracted for each construct, items loadings on their constructs and items cross loadings on other constructs. These statistics are presented in Tables 9 and 10.

Construct*	CR	AVE	Strategist	Relationship Architect	Integrator	Educator	Utility Provider	Info. Steward
Strategist	0.88	0.55	**0.74****					
Relationship Architect	0.88	0.71	0.34	**0.84**				
Integrator	0.83	0.55	0.52	0.33	**0.74**			
Educator	0.90	0.76	0.56	0.26	0.48	**0.87**		
Utility. Provider	0.84	0.57	0.22	0.32	0.45	0.22	**0.75**	
Info. Steward	0.81	0.59	0.46	0.43	0.40	0.44	0.43	**0.77**

*all items measured using seven point Likert scale ranging from ' not at all important' (1) to 'critically important' (7).
** Square root of AVE on diagonal; CR = Composite Reliability; AVE = Average Variance Extracted.

Table 9 Inter-Correlation among CIO Roles and Reliability Coefficients

As can be seen from Table 9, the composite reliability (CR) proposed by Werts, Linn, and Joreskog (1974) for all constructs exceeds the satisfactory level of 0.7 which supports internal consistency reliability. Reliability at the indicators level can be checked by examining the items loading on their respective constructs (see Table 10). Chin (1998a) and Henseler (2009) suggested 0.7 as a rule of thumb as a standardized outer loading to ensure that the indicator has captured at least half of the variance. The factor loading of all items exceed the standardized cut off except for five items of which three are over 0.6 and two are below 0.4. A decision was made to keep the first three items as long as the composite reliability for their respective constructs is still over the satisfactory level of 0.7 (Henseler et al. 2009) and remove the two items with the lower factor loadings of less than 0.4. The average variance extracted (AVE) proposed by Fornell, and Larcker (1981) for all research constructs as shown in Table 9 exceed the acceptable cut off 0.5 which indicates sufficient convergent validity.

Items	Strategist	Integrator	Relationship Architect	Educator	Utility Provider	Information Steward
Set1	**0.67**	0.32	0.27	0.32	0.35	0.11
Set2	**0.74**	0.53	0.26	0.39	0.35	0.25
Set3	**0.75**	0.48	0.25	0.38	0.29	0.25
Set4	**0.76**	0.54	0.36	0.54	0.41	0.24
Set5	**0.78**	0.26	0.23	0.43	0.35	0.05
Set6	**0.76**	0.20	0.17	0.40	0.29	0.30
Integ1	0.45	**0.75**	0.21	0.25	0.42	0.49
Integ2	0.37	**0.64**	0.25	0.46	0.26	0.24
Integ3	0.27	**0.76**	0.22	0.33	0.26	0.31
Integ4	0.46	**0.81**	0.31	0.42	0.24	0.28
ReAr1	0.25	0.26	**0.81**	0.13	0.28	0.20
ReAr2	0.33	0.32	**0.90**	0.30	0.37	0.30
ReAr3	0.29	0.26	**0.82**	0.22	0.45	0.30
Edu1	0.41	0.48	0.21	**0.84**	0.43	0.28
Edu2	0.55	0.4	0.24	**0.88**	0.35	0.10
Edu3	0.48	0.36	0.23	**0.89**	0.37	0.18
UtPr1	0.11	0.23	0.25	0.11	**0.68**	0.29
UtPr2	0.17	0.37	0.21	0.22	**0.80**	0.33
UtPr3	0.08	0.31	0.24	0.13	**0.81**	0.34
UtPr4	0.33	0.45	0.27	0.19	**0.73**	0.35
InfSt2	0.36	0.41	0.41	0.30	0.40	**0.70**
InfSt3	0.44	0.33	0.36	0.43	0.29	**0.78**
InfSt4	0.26	0.19	0.24	0.28	0.31	**0.81**

Table 10 Six CIO Roles Construct's Items Loadings and Cross loadings (Source: PLS Results)

Discriminant validity at the indicators level is evident in Table 10 as all remaining items are strongly related (loadings) to the constructs they were intended to measure and they do not have a stronger connection with another construct (cross loadings). Discriminant validity at the construct level is confirmed, as the square root of the AVE values of all constructs are larger than the inter-correlation of the constructs in the model which means that all constructs shared more variance with their own measures than with others (see Table 9). Since the reliability and validity of each construct for the six CIO roles was confirmed, the mean for each set of items retained for each of the six CIO roles was calculated in order to perform the ANOVA and correlation analysis required for the hypotheses testing.

Non-response bias test

In order to assess non-response bias and following the guidelines presented in Armstrong and Overton (1977) and Sivo, Saunders, Chang, and Jiang (2006) a comparison was conducted

between the early respondents (N=21) and late respondents (N=13) in terms of the research variables. It is assumed that late responders share similarities with non-responders and, if no significant differences are found between early and late responses, the likelihood is strong that non-response bias did not occur. Mann-Whitney U test was used for this purpose since the data comprise some categorical variables. The results of the Mann-Whitney U test conducted on 26 items (presented in Appendix A) found statistically significant differences in only one item which means that there are no major differences between early and late respondent CIOs. These results confirmed three important things regarding our data: (1) the absence of non-response bias in our data; (2) the representativeness and generalizability of our sample; and (3) the CIOs' perceptions regarding the research variables are not influenced over time.

Testing research hypotheses

Having confirmed the reliability and validity of the research measures for the six key CIO roles and established the absence of non-response bias, the next stage of the data analysis involved splitting the total data set (162 responses) into four sub groups based on the organisation's strategic IT vision. These four groups across the 162 respondent organisations were: Automate (32); Informate-down (31); Informate-up (29); and Transform (70). These four groups provide the basis for testing the research hypotheses. Table 11 exhibits the mean and standard deviation of the six CIO roles for the overall sample and the subsamples of organisations grouped according to their vision of IT.

CIO Roles	Overall N= 164 Mean S.D.	Automate N=32 Mean S.D.	Informate-down N=31 Mean S.D.	Informate-up N=29 Mean S.D.	Transform N= 70 Mean S.D.
Strategist	5.37 0.98	5.16 0.99	5.29 1.06	5.27 1.21	5.58 0.79
Relationship Architect	5.58 0.94	5.35 1.28	5.82 0.90	5.54 0.77	5.60 0.83
Integrator	5.01 0.99	5.12 1.00	5.26 1.15	4.81 1.10	4.94 0.84
Educator	4.79 1.20	**4.28** 1.42	4.95 1.09	4.78 1.33	**4.97** 1.03
Information Steward	5.74 0.82	**5.44** 0.97	**5.91** 0.89	5.55 0.87	**5.87** 0.63
Utility Provider	5.60 0.90	5.66 0.84	5.72 0.92	5.53 1.08	5.55 0.84

Table 11 Descriptive Statistics for Six Key CIO Roles across Four IT Visions (Source: Developed for this study)

Testing Hypothesis One

A one-way analysis of variance (ANOVA) was conducted to determine whether the means of the six key CIO roles differed across the four groups of IT vision. Results partially support research hypothesis one as they show that there are significant differences at the $p < .05$ level among two of the six key CIO roles across the four groups of an organisation's IT vision. Next, to determine which CIO roles were significantly different across the four groups of IT vision, Tukey post-hoc comparisons of the four groups of IT visions were conducted and indicated that there are significant differences between the CIO role as an Educator in the firms that articulate a 'transform' vision (M= 4.97, SD = 1.03) and those firms that articulate an 'automate' vision (M= 4.28, SD 1.42). Results also show that there are significant differences between the CIO role as an Information Steward in the firms that articulate an IT 'transform' vision (M= 5.87, SD = .64) and those firms that articulate an IT 'informate-down' vision (M = 5.91, SD = .90) and those firms that articulate an 'automate' vision (M= 5.44, SD .97). The effect size calculated using eta squared was 0.05 for the Educator role and 0.05 for the Information Steward role. According to Cohen (1988) the effect sizes of 0.05 can be considered a medium effect. Table 12 provides a summary of ANOVA results including

Levene's test for homogeneity which are all not significant at the $p > .05$ level indicating that the population variance for each group are approximately equal.

CIO Role	Levene Statistic	F(3,159)	Sig	Eta Squared
Strategist	1.86 *n.s*	2.10	0.10 *n.s*	N.A
Relationship Architect	2.08 *n.s*	1.35	0.25*n.s*	N.A
Integrator	1.63 *n.s*	1.28	0.28 *n.s*	N.A
Educator	2.28 *n.s*	2.70	**0.04***	**0.05**
Information Steward	2.46 *n.s*	3.06	0 **.03***	**0.05**
Utility Provider	1.04 *n.s*	0 .372	0.77 *n.s*	N.A
*n.s = Not Significant; * Significant at p < 0.05*				

Table 12 ANOVA Results Regard the CIO Roles across Four IT visions

The results shown in Table 12 partially support research hypothesis one.

Testing Hypotheses Two

In order to test the relationship between the CIO's structural power (job title and reporting structure) and the organisation's view of IT, and due to the ordinal nature of these variables, the authors ranked the data regarding the three research variables, strategic IT vision, CIO reporting structure, and CIO job title in a logical ordinal rank order from lowest to highest. This allowed us to perform a nonparametric correlation using Spearman's rank-order correlation. Table 13 illustrates how we recoded the research variables into ordinal rank order for the purpose of testing research hypothesis two.

Strategic IT Vision	CIO's Reporting Structure	Common CIO's Job title	Item Rank	Importance Rank
Automate	To Others	EDP / MIS Manager	1	Low
Informate-down	To COO	IS/IT Manager/Director	2	Moderate
Informate-up	To CFO	CTO	3	High
Transform	To CEO	CIO / Vice President IT	4	Very High

Table 13 Ranking of Three Research Variables for Hypothesis Two

The total data set of 162 valid responses from Australian senior IT executives was used to test research hypothesis two. Spearman's rank-order correlation was performed between the three variables (Strategic IT vision, CIO reporting structure, and CIO job title). Results of the correlation analysis indicate that an organisation's strategic IT vision is significantly and positively associated with both the level of the CIO reporting structure ($r = .178$, $p < .024$, 2 tailed) and the level of the CIO job title in an organisation ($r = .207$, $p < .008$, 2 tailed). This

finding supports the notion that the more progressively an organisation views IT from 'Automate' up to 'Transform', the more likely it is that the CIO will report to the upper level of senior management and will have higher level job title in an organisation. These results provide support for research hypothesis two. Table 14 shows descriptive statistics of a cross tabulation regarding the CIO's reporting structure and job title across four different contexts of IT visions which provide further support for the results of Spearman's rank-order correlation. As evidenced in Table 14 there are higher percentages of IT leaders (CIOs) reporting to the most senior executive in an organisation (CEO). These IT leaders have the highest job titles and tend to be in organisations with a transform vision for the role of IT rather than organisations with an automate vision of IT, an informate-down vision of IT ,and an informate-up vision of IT. It is worth mentioning that a comparison of the Australian CIOs reporting figures illustrated in Table 14 with other surveys also conducted in Australia e.g., Watson (1990) and Leonard (2007) provide further evidence for the significant increase over time of CIOs reporting to the CEO. This percentage increased from 14 percent in 1989 (Watson 1990), to 33 percent in 2007 (Leonard 2007), to 44 percent in 2012 in our study.

IT Visions CIO Status	**Automate N= 32**		**Informate- down N= 31**		**Informate- up N= 29**		**Transform N= 70**	
	Freq.	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
CIO Reporting: To Other	5	15.6	5	16.1	3	10.3	6	8.6
To The COO	4	12.5	2	6.5	3	10.3	5	7.1
To The CFO	12	37.5	14	45.2	12	41.4	22	31.4
To The CEO	11	34.3	10	32.3	11	37.9	37	52.9
CIO Job Title: EDP/ MIS Manager	4	12.5	3	9.67	1	3.4	4	5.7
IS/IT Manager	16	50	16	51.6	14	48.2	25	35.7
CTO	1	3.1	2	6.5	1	3.4	2	2.9
CIO/ Vice President IT	11	34.3	10	32.3	13	44.8	39	55.71

Table 14 CIO Reporting Structure / Job Title within the Context of Strategic IT Vision

DISCUSSION, LIMITATIONS, AND FUTURE RESEARCH

Our study found that the importance of the six distinct CIO roles differ partially in regards to their organisation's strategic IT vision as perceived by their CIOs. The results of this study suggest that there is a significant effect of the IT vision of the firm on the CIO roles of Educator and Information Steward. The Australian CIOs who oversee IT in an organisation with a 'transform' vision of IT perceived the Educator and the Information Steward roles more important than other CIO roles in comparison to those who work within organisations with an 'automate' IT vision. The Information Steward was also perceived to be more important by the CIOs within organisations with an 'informate–down' IT vision in comparison to those who work within organisations with an 'automate' IT vision.

The possible explanation for the importance of the CIO's Educator role in an organisation that adopted the 'transform' vision of IT might be due to the major cultural change required in firms going through transformational change (Schein 1989, 1992) which in turn requires the CIOs to pay more attention to the Educator role. The CIOs within organisations that articulate a 'transform' vision of IT need to perform two types of educational activities in order to promote IT as an agent of business transformation (Kadlec 2004). The first is the facilitating educational activities that are important to provide the top management team (TMT) with required knowledge regarding the emerging technology and how it can transform business (TMT mental model building). The second type of educational activities is empowerment activities which are important to provide the top management team with required knowledge regarding the established technologies used and how the firm can invest in these technologies to transform its business (TMT mental model maintenance). The importance of the CIO's Educator role in Australian firms that articulate the 'transform' vision of IT, provides further support for Pervan's (1998) finding that Australian CIOs have a greater need for IT education

of senior management. Also, the role of the CIO as an Information Steward in 'transform' vision organisations was found to be more important possibly because the emerging concern of how to 'keep the lights on', provide high quality information, protect organisation data, customer privacy, and recruit qualified IT staff within the radical change brought about from adopting this transformational view of IT.

The same concern will emerge in CIOs who work within organisations that expressed the 'informate-down' vision of IT as according to Schein (1989, 1992) this view required the whole system to be transparent to employees which challenges the CIO's role as an Information Steward responsible for organisational data security and privacy.

Surprisingly, as the view of IT matures from 'automate' to 'transform' the strategic roles of the CIOs do not become more important which is consistent with the finding of Kaarst-Brown (2005) as she found that, despite the strategic potential of IT in the investigated organisations, the CIOs are often not granted the same strategic decision-making authority as other business executives. Also, these findings align with Grover et al.'s (1993) study which found that as IS matures the CIOs' strategic roles do not become more important as one might expect. On the other hand, those findings conflict with those of Smaltz (2000) who found an increase in the importance of the CIOs' strategic roles in organisations that expressed the 'transform' vision of IT. Two possible explanations are offered. Firstly, Smaltz (2000) conducted his research within the healthcare sector which has special characteristics, is information intensive and is still undergoing a continuous transformation process toward greater use of IT. The second explanation might be as the role of IT matures in an organisation, the other executives in the top management team will play a more proactive role in setting the IT strategic vision for the organisation.

Our study also found that IT leaders in organisations with transformational vision of IT are more powerful in terms of their job title and their reporting level than their counterparts in

organisations that articulated lower vision of IT such as 'informate-up', 'informate-down' and 'automate' views. That means the IT leaders in organisations that articulated the higher transformational view of IT are more likely to have a higher level report to the CEO and hold the higher title of CIO or Vice President IT, whereas IT leaders in organisations that articulated a lower 'informate-up', 'informate-down' or an 'automate' view of IT are more likely have a lower level report to the CFO or COO and more likely to hold the lower title of CTO or IT /IS manager/director. These results are consistent with the results of Karimi et al. (1996); Grover et al. (1993); Raghunathan and Raghunathan (1989); Cohen and Dennis (2010); and Banker et al. (2011) who argued that the rank of the IT leaders should align with the firm's competitive strategy and IT orientation. Secondly these finding provide further support for the proposition developed by Sherer (2004) which argued that the reporting structure of IT leaders is influenced by the strategic vision of IT.

Our study has contributed to the body of knowledge in several ways. First, it is one of few studies that has examined the perceived importance of the configuration of CIO roles across organisations in relation to the different strategic views of IT and presents some interesting results. Furthermore, the results of this study support the validity of the configuration of CIO roles instrument developed by Smaltz et al. (2006) and indicate that this CIO roles configuration instrument is relevant to CIOs in different industries and not solely in the healthcare sector, which provides further support for the findings of Agarwal and Beath (2007) and Strickland (2011).

This study has several useful implications for different stakeholders. First, the findings of this study are important for CIOs as it is indicates the need to adapt their configuration of roles according to their organisation's strategic view of IT. Secondly, the key findings of this study can provide guidance to top management recruiting the right CIO who will be able to play the right configuration of roles that fit with the organisation's strategic view of IT. Moreover, the

training programmes for the specialist institutions responsible for preparing CIOs can be enhanced by the key findings of this study regarding the need to consider a configuration of CIO roles that are aligned with organisation's strategic vision of IT. Furthermore, this study has indicated some gaps in the literature regarding the lack of studies of the CIO role that apply classic managerial roles configurations other than Mintzberg's managerial work framework such as Adizes (1976, 2004), Quinn et al. (2006), and Hart and Quinn (1993).

Despite the key findings reported from this study, some limitations should be acknowledged. The findings of this study represent the perceptions of Australian CIOs which might not match with the perception of CIOs in other countries. In addition, identifying the organisational view of IT is based on the perception of a single manager (the CIO) rather than considering multiple perceptions (e.g. all top management team) hence the findings of this study regarding the relationship between the six CIO roles and the firm's IT vision should be treated with caution and investigated in greater detail from the multiple perspectives of all of the top management team.

The key findings and the gaps identified by this study warrant further research. First, studying the impact of the strategic IT vision on the configuration of CIO roles in different countries is needed in order to validate the generalizability of our study's findings and facilitate conducting a comparison among the IT leaders in different countries. Also, using different instruments whether for the CIO role or for the IT vision is required to better capture a comprehensive picture of the participants' perceptions in this area. Examining the relationship between the same constructs with a bigger sample size or extending the identification of the organisational view of IT to include other members of the firm's top management team could give different results. Finally, investigating the impact of other organisational contingencies such as organisational information intensity, organisational culture, organisational climate, organisational life cycle, and organisational IT maturity on the configuration of CIO roles is

central to clarifying that vital role and filling the gaps in the body of knowledge. Finally, applying some neglected classic managerial roles configurations such as Adizes (1976,2004), Quinn et al. (2006) and Hart and Quinn (1993) could give another perspective and further insights regarding CIO roles.

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Appendix A: Mann-Whitney U Test for non-response bias

Items	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	z-score	Asymp. Sig. (2-tailed)
Set1	Early	21	17.26	362.50	131.50	362.50	-0.19	0.84
	Late	13	17.88	232.50				
Set2	Early	21	17.19	361.00	130.00	361.00	-0.24	0.81
	Late	13	18.00	234.00				
Set3	Early	21	18.07	379.50	124.50	215.50	-0.45	0.65
	Late	13	16.58	215.50				
Set4	Early	21	17.69	371.50	132.50	223.50	-0.14	0.88
	Late	13	17.19	223.50				
Set5	Early	21	15.64	328.50	97.50	328.50	-1.43	0.15
	Late	13	20.50	266.50				
Set6	Early	21	16.05	337.00	106.00	337.00	-1.12	0.26
	Late	13	19.85	258.00				
Integ1	Early	21	18.31	384.50	119.50	210.50	-0.62	0.53
	Late	13	16.19	210.50				
Integ2	Early	21	19.50	409.50	94.50	185.50	-1.54	0.12
	Late	13	14.27	185.50				
Integ3	Early	21	18.40	366.50	117.50	208.50	-0.69	0.48
	Late	13	16.04	208.50				
Integ4	Early	21	16.90	355.00	124.00	355.00	-0.46	0.64
	Late	13	18.46	240.00				
ReAr1	Early	21	20.38	428.00	76.00	167.00	-2.26	**0.02***
	Late	13	12.85	167.00				
ReAr2	Early	21	19.71	414.00	90.00	181.00	-1.73	0.08
	Late	13	13.92	181.00				
ReAr3	Early	21	19.60	411.50	93.50	183.50	-1.63	0.10
	Late	13	14.12	163.50				
Edu1	Early	21	15.74	330.50	99.50	330.50	-1.36	0.17
	Late	13	20.35	264.50				
Edu2	Early	21	16.10	338.00	107.00	338.00	-1.08	0.27
	Late	13	19.77	257.00				
Edu3	Early	21	15.07	316.50	85.50	316.50	-1.88	0.06
	Late	13	21.42	278.50				
UtPr1	Early	21	18.79	394.50	109.5	200.50	-1.00	0.31
	Late	13	15.42	200.50				
UtPr2	Early	21	18.55	389.50	114.50	205.50	-0.81	0.41
	Late	13	15.81	205.50				
UtPr3	Early	21	18.38	386.00	118.00	209.00	-0.677	0.49
	Late	13	16.08	209.00				
UtPr4	Early	21	19.21	403.50	100.50	191.50	-1.30	0.19
	Late	13	14.73	191.50				
InfSt2	Early	21	17.57	369.00	135.00	226.00	-0.05	0.95
	Late	13	17.38	226.00				
InfSt3	Early	21	16.17	339.50	108.50	339.50	-1.02	0.30
	Late	13	19.65	255.50				
InfSt4	Early	21	17.36	364.50	133.50	364.50	-0.11	0.90
	Late	13	17.73	230.50				
S.IT.V	Early	21	15.36	322.50	91.50	322.50	-1.72	0.08
	Late	13	20.96	272.50				
CIO. J.T	Early	21	17.86	375.00	129.00	220.00	-0.288	0.77
	Late	13	16.92	220.00				
CIO.R.S	Early	21	16.07	337.50	106.50	337.50	-1.12	0.26
	Late	13	19.81	257.50				

***** *Sig. P< 0.05*